

عنوان مقاله:

Evaluation of the Effects of Thymoquinone on Oxidative Stress in A549 Lung Cancer Cell Line

محل انتشار:

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خلاصه مقاله:

Background: Thymoquinone (TQ), an active part of *Nigella sativa*, has been reported as an anticancer agent. This study aimed to evaluate different anticancer effects of TQ on oxidative stress markers and Peroxiredoxin 4 (PRXD4) in lung cancer A549 cell line. Method: In this experimental study, we used TQ concentrations to treat lung A549 cells and determined cell viability by the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay at 12, 24, and 48 h times. The IC50 concentration of TQ was found with MTT assay. We studied the total antioxidant capacity (TAC) and total oxidant status (TOS) using the manual assay, and analyzed catalase (CAT), superoxide dismutases (SOD), and glutathione peroxidase (GPx) activity using the enzyme-linked immunoassay (ELISA) kits. Moreover, the concentration of peroxiredoxin-4 (PRXD4) was measured with the ELISA Kit. Results: The IC50 of TQ for A549 cells was calculated to be 40 μM concentration for 24 h of incubation. TAC index significantly decreased in the treated cells compared with the controls ($P = 0.05$), whereas TOS and PRXD4 levels showed a significant increase ($P = 0.05$). Additionally, the results showed that the CAT, SOD, and GPX activity enzymes significantly decreased in 20, 40, and 60 μM TQ in comparison with the control cells ($P = 0.05$). Conclusion: TQ has significant inhibitory effects on A549 cells and could be utilized in novel therapy not only for lung cancer, but also for other tumors.

کلمات کلیدی:

Thymoquinone, Oxidative stress, Peroxiredoxin 4, Lung Neoplasms

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